

tion with living species, or declare their bygone existence as extinct species" (p. 62).

Here Mr. Gant's meaning can only be guessed at. In other cases, though the sense may be easy to grasp, the language shows an almost Thucydidean disregard of grammatical construction. The following passage may serve as an instance :—

"This law of orderly sequence . . . is unlimited in the extent of its operation ; and having produced the face of Nature she now presents, so, doubtless, will the portrait change in the future" (p. 68).

Here is a not unfair specimen of the author's way of overloading his sentences :—

"The moveable coccyx terminates in a blunt point, which . . . is a rudimentary *tail* ; with which so many animals are provided, with diverse uses, in climbing, *e.g.*, some apes ; as an additional leg in bounding, or a formidable weapon for striking, *e.g.*, the kangaroo" (p. 40).

This calls for criticism in more respects than one.

We pass over Mr. Gant's views on the subject of heredity. They are open to question, but the main point at issue is immaterial with regard to the purpose of the book. The like may be said of a curious misuse of the term "natural selection" on p. 42. The reference to spiders and scorpions as "insects" is less excusable.

It is fair to state that the abrupt and disjointed style—to use no harsher terms—into which the author so frequently falls does not appear to reflect a corresponding incoherence of thought. Within certain limits, his chapters give the impression that what he has to say, if he could only express it fitly, would be worthy of attention. It is unfortunate that he has failed to find a more attractive method of imparting conclusions many of which are in themselves sufficiently sound and sensible.

OUR BOOK SHELF.

The Distribution of Rainfall over the Land. By Andrew J. Herbertson, Ph.D., F.R.S.E. With 13 maps and a plate. (London : John Murray, 1901.)

EVERY meteorologist will be most glad to possess this very valuable work on the distribution of rainfall over the earth's surface. Dr. Herbertson seems to have spared no pains to utilise all the available material, and the result is that he is able to present us with rainfall maps for every month in the year, giving not only the seasonal distribution of rain, but a knowledge of the actual amount. Each map is accompanied by general remarks as to the position of the pressure belts, wind systems, and other useful information which are fundamental in studying the weather from month to month. Further, a map, with descriptions, &c., is given, illustrating the mean annual rainfall over the land surface. The book includes also a very useful set of curves showing the monthly distribution of rainfall in percentages of the annual fall for seventy-four selected stations. From these it can be seen at a glance whether a station receives the majority of its rainfall at one period of the year, such as Bombay, Peking, Bathurst, &c., or whether there are two periods of rainfall each year, as at Colombo, Lagos, Peshawar, &c. The importance of keeping separate the rainfall that is received at one place during a year at the two monsoons and not combining them when there happen to be two periods of rainfall is of fundamental importance at the present day, and the volume before us will help to show when the yearly mean alone may be used.

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Dr. Herbertson concludes this valuable addition to the meteorological library by giving the data he used in drawing the maps, namely a useful bibliography, and tables showing each station, latitude and longitude of each, the period over which rainfall observations have been made, the altitude, and, lastly, the mean rainfall for the period for each month.

Tierleben der Tiefsee. Von Oswald Seeliger. Pp. 49. (Leipzig : W. Engelmann, 1901.) Price 2s.

THIS is a popular exposition, by a well-known and thoroughly competent zoologist, of the leading features of deep-sea life and of the conditions under which it exists. It is, of course, primarily for German readers, and is evidently, and very properly, intended to direct attention to the recent German Deep-Sea Expedition. The results of the preceding "Plankton" Expedition are also referred to. The little book contains about fifty pages, of which the first thirty constitute the essay proper and the remaining twenty are notes upon paragraphs and statements in the text, and give references to the literature of the subject. In such limited space it is obvious that no exhaustive treatment is possible; many important matters are barely mentioned, and in fact the whole can only be regarded as, at most, a sketch of this large department of oceanography.

The subjects dealt with are :—depths, pressure and its effects, the distribution of temperatures, the penetration of sunlight, the deep-sea deposits, the question of food, the bipolar theory of distribution, the presence of very ancient animal types, the so-called "living fossils," and the "phosphorescence" of the sea, with some account of the light-producing organs of certain Crustacea and fishes. There is also scattered through the pages a certain amount of discussion of the characteristics and distribution of deep-sea animals.

The essay is illustrated by one coloured plate entitled "Tiefsee-Idyll," showing, not too clearly and without sufficient delicacy of detail, about twenty species of deep-sea animals belonging to various groups. It is intended to demonstrate the characteristic colours, and especially the red coloration of so many abyssal Crustacea, Echinodermata and Cœlenterata when they are brought to the surface. Both in drawing and colouring, however, the plate is rather crude, and probably gives an incorrect impression by showing so many different kinds of animals packed so close together in a very small area.

W. A. H.

A Guide to the Shell and Star-fish Galleries (Mollusca, Polyzoa, Brachiopoda, Tunicata, Echinodermata and Worms), in the British Museum (Nat. Hist.). Pp. v+130; illustrated. (London: Printed for the Trustees, 1901.)

THIS admirable little work, written by Messrs. Smith, Bell and Kirkpatrick and sold for sixpence, may be described as the best and cheapest elementary natural history of the groups of which it treats hitherto published. A large number of excellent text-figures (some original and others borrowed from well-known works) illustrate the leading external and anatomical characters of the more important types. And although in certain places the text is necessarily somewhat technical, the diagrammatic illustrations render the meaning and application of the special terms so easily understood that every reader ought to experience little difficulty in gaining a general idea of the various groups described. This feature of the work is specially noticeable in the case of the polyzoans, whose structure often forms a stumbling-block to the beginner; and we know of no other book containing such a number of excellent figures of this group in such a small space.

The authors have not been unmindful of the economic side of zoology; and the reader will find much to

interest him concerning pearls, cameos and oysters. The nomenclature has been, in the main, brought up to date, the trumpet-shell figuring as *Lotorium variegatum* in place of the familiar *Triton tritonis*, while *Scala*, instead of *Scalaria*, stands for the precious wentletrap.

A Text-book of Astronomy. By Prof. George C. Comstock. Pp. viii + 391. (New York and London : D. Appleton and Co., 1901.) Price 7s. 6d. net.

IT is an excellent sign that among recent works dealing with astronomy there have been some in which methods of teaching the elementary parts of the subject have formed a notable feature. The book under notice is to be regarded as one of this class, as the author, a well-known American astronomer, has endeavoured to "concentrate attention upon those parts of the subject that possess special educational value." The importance of observations with simple appliances is strongly insisted upon in the preface, but from this point of view the book is distinctly disappointing. It is true that in the earlier chapters an attempt is made to introduce practical exercises, some of them observational and others involving the construction or study of drawings; but this admirable beginning is by no means consistently followed up. In fact, the greater part of the book does not strike us as being other than a general outline of the chief facts and principles of astronomy suitable for ordinary reading, except that at intervals the reader is expected to pause and answer a question, such as "What is the magnitude (of Algol) 43 days after a minimum?" The practical method, however, might well have been further adopted; a telescope of adequate power for the demonstration of many phenomena, such as the sun's rotation, can be cheaply and easily constructed, and graphical exercises might have been more frequently introduced with advantage. We notice, also, that the use of a globe in illustrating celestial motions is not mentioned at all. Nevertheless, so far as it goes, the practical work described will be of great value to students, and will doubtless encourage them to further efforts in the same direction.

The book touches upon nearly every branch of astronomy, and the explanations and descriptions are both concise and clear. The numerous illustrations have been selected and reproduced with great care, and, as the author remarks, are worthy of as careful a study as the text; the diagram on p. 153, illustrating the path of the moon with respect to the sun, deserves special mention.

An Introduction to the Practical Use of Logarithms. By F. G. Taylor, M.A., B.Sc. Pp. vi + 63. (London : Longmans, Green & Co., 1901.) Price 1s. 6d.

THERE can be little doubt that much time is lost by students and others who have occasion to make numerical calculations through unfamiliarity with the practical advantages of logarithms. In the present little book, however, by the consistent employment of the simplest arithmetical illustrations, the author goes far to remove the mystery in which, to many students, the subject appears to be involved by fuller theoretical treatment. The explanations are clear throughout, and these, together with the numerous carefully selected examples, should enable a student of ordinary intelligence to quickly master the use of logarithmic tables. The tables themselves occupy but six pages, two for logarithms, two for reciprocals and two for anti-logarithms. A chapter on methods of rough calculation, intended to verify the results obtained by the use of logarithms, forms a valuable addition to the book. The general subject is excellently illustrated by the application to problems in mensuration, and the whole is brought well within the range of students who have no knowledge of algebra.

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LETTER TO THE EDITOR.

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The Moon and Wet Days.

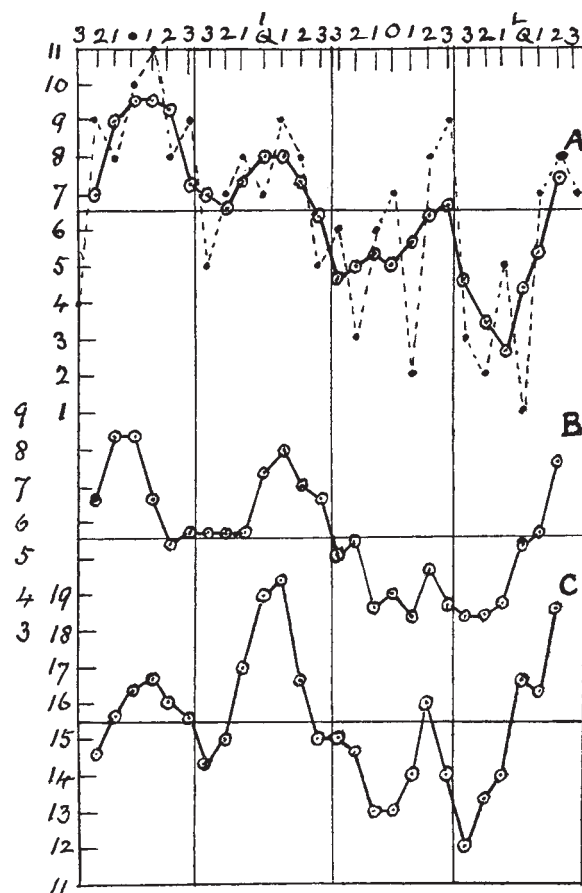
THOUGH it is counted heresy in some quarters to associate weather with the moon, the following results of a recent inquiry into the subject, whether held to be proof of lunar influence or not, might, I think, be of interest to many.

The period considered is the last 24 years. The data (which are for Greenwich) are these:—

(A) Days with '5 in. of rain, or more, in the year.

(B) Days with '4 in., or more, in the summer half (April to September).

(C) Days with '2 in., or more, in the summer half.



The method in each case was first to ascertain the distribution in seven days about each of the four lunar phases (*i.e.* how often each of those 28 days had rain amounting, *e.g.*, to '5 in., or more), then smooth the series with averages of three.

Both smoothed and unsmoothed curves are given in the case of A; but only the smoothed curves for B and C.

From the fact that four weeks does not quite cover the time of a synodical revolution of the moon (which is about 29½ days), there are a few wet days in each class not coming under any of the above categories. These may perhaps, with regard to the purpose of the inquiry, be left out of account. The totals dealt with are: A, 182 days; B, 158; and C, 433. These come short of the actual totals by A, 7 days; B, 8; C, 28.

Turning now to the curves, the recurrence of four long waves in the smoothed curve for A (less pronounced in C and B), may be noted, in passing, as a remarkable feature.